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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/770,039	01/25/2001	Philip R. Thrift	TI-29973	5611

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EXAMINER

ZHEN, LI B

ART UNIT	PAPER NUMBER
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2126

DATE MAILED: 05/18/2004

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/770,039

Applicant(s)

THRIFT ET AL.

Examiner

Li B. Zhen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1 – 4 are pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 – 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent NO. 5,842,014 to Brooks [cited in the previous office action] in view of U.S. Patent NO. 5,392,448 to Frankel.

4. As to claim 1, Brooks teaches the invention substantially as claimed in including a system, comprising:

(a) a general purpose processor [host CPU; col. 5, lines 36 – 42];

(b) a digital signal processor coupled to the general purpose processor [one or more DSP "Farm" Cards 20, 21 and 23, which contain one or more DSPs; col. 5, lines 49 – 52];

(c) a first software system [application 60, Fig. 2; col. 7, lines 12 – 33] operating on the general purpose processor, the first software system including a media framework with a first interface for a plug-in [plug-ins may be seen as pieces of stand-

alone code and they were developed in C++ for the benefits that an object-oriented programming language; col. 7, lines 33 – 40];

(d) a second software system [DSP code running on the DSP chip] operating on the digital signal processor, the second software system including with a second interface for a plug-in [DSP code running on the DSP chip is dedicated to the plug-in to efficiently implement the set of algorithms associated with the plug-in; col. 7, lines 40 – 52];

(e) the first and second software systems each containing portions forming a communication bridge coupling the first and second software systems [DSP plug-ins allow such things as application to plug-in communication, hardware allocation and basic user interface capabilities once as object calls; col. 7, lines 33 – 42]; and

(f) an extending interface in the first software system, the extending interface coupling to the second framework [Every time a plug-in object asks an algorithm object to run one more of its algorithms on a DSP, an instance object is created to manage the actual running of the DSP code that performs this instance of the algorithm; col. 7, line 60 – col. 8, line 10 and col. 8, lines 51 – 60].

5. Although Brooks teaches the invention substantially as claimed, Brookes does not specifically teach a software system that includes a second framework operating on the digital signal processor.

However, Frankel teaches a system including a general purpose processor [host CPU 54, Fig. 2; col. 7, lines 50 – 65], a digital signal processor coupled to the general purpose processor [DSP 10, Fig. 2; col. 5, lines 10 – 35], a first software system

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operating [a DOS operating system 65; 7, lines 37 – 52] on the general purpose processor, a second software system operating [DSP operating system 20, Fig. 1; col. 5, lines 35 – 60] on the digital signal processor, the second software system including a second framework [Each other hierarchical module 36, 38, 40, 42, 44 is organized around a particular type of abstract object which encapsulates a set of related constants, data types, and functions; col. 6, lines 47 – 65] with a second interface for a plug-in [host I/O module 32 comprises a "stdio" interface for a C language based system; col. 5, lines 35 – 60], and an extending interface in the first software system, the extending interface coupling to the second framework [library is readily extensible through use of the abstract objects and macro functions; col. 16, line 61 – col. 17, line 5].

6. It would have been obvious to a person of ordinarily skilled in the art at the time of the invention to apply the teaching of including a framework in a software system operating on the digital signal processor as taught by Frankel to the invention of Brooks because the hierarchical arrangements of the abstract objects enable a high level programming language to be used in accessing a wide variety of available functions [col. 3, lines 25 – 30 of Frankel].

7. As to claim 2, Brooks as modified teaches the second framework includes a resource manager which registers a plug-in to the second plug-in interface [a number of hierarchical object managers or modules supported by a nucleus with real-time kernel

for memory management, device driver support, and preemptive, interruptible multi-tasking; col. 3, line 55 – col. 4, line 18 of Frankel].

8. As to claim 3, Brooks as modified teaches the plug-in is a media codec [application requests the plug-in to implement an compression algorithm....If DSP 32 is available, it is directed to run DSP code designed specifically to implement the compressor as well as the gate and expander algorithms concurrently; col. 9, line 40 – col. 10, line 8 of Brooks].

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frankel in view of U.S. Patent NO. 6,658,027 to Kramer.

10. As to claim 4, Frankel teaches the invention substantially as claimed in including a method of processing media streams, comprising:

(a) providing host processor [host CPU 54, Fig. 2; col. 7, lines 50 – 65] with a first software system [a DOS operating system 65; 7, lines 37 – 52];

(b) providing a digital signal processor [DSP 10, Fig. 2; col. 5, lines 10 – 35] with a second software system [DSP operating system 20, Fig. 1; col. 5, lines 35 – 60] and coupled to the host processor and first software system [host I/O module 32 comprises a "stdio" interface for a C language based system; col. 5, lines 35 – 60];

(c) providing an host application [host programs] coupled to the first software system [host programs are linked with the host library; col. 8, lines 40 – 67] and a signal

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processing application [DSP program] coupled to the second software system [DSP programs are assembled and then linked with the chosen math functions in the DSP library; col. 8, lines 40 – 67];

(d) transfer a first data frame [Managing lists of I/O data frames; col. 6, lines 23 – 34] from the first software system to a first buffer of the second software system [Exchanging data between the application program and the device driver; col. 6, lines 23 – 33];

(e) send a message from the first software system to the signal processing application [host driver packages the DOS I/O function into a message and sends the message to the host 54 via the shared memory of the DSP subsystem 62; col. 8, lines 3 – 10];

(f) send a message from the signal processing application to the first software system [message or data that is to be passed back from DOS is packaged by the DSP driver in the host 54 as a message and sent to the DSP subsystem 62; col. 8, lines 1 – 19];

(g) transfer a second data frame from the first software system to a buffer of the second software system [When the application uses SS.sub.-- get() to place the next block of n data points in the array, the new buffer 74 that was filled by the input device 72 is swapped for the buffer 76 associated with that array; col. 9, line 63 – col. 10, line 16];

(h) send a message from the signal processing application to the first software system containing the first data after processing [message or data that is to be passed

back from DOS is packaged by the DSP driver in the host 54 as a message and sent to the DSP subsystem 62; col. 8, lines 1 – 19];

(i) the first software system provides the first data frame after processing to the host application [result each stream I/O request from the application program can be responded to quickly with an exchange of buffer pointers; col. 13, lines 8 – 30]; and

(j) repeat steps (d)-(i) for subsequent data frames and buffers [When the application uses SS.sub.-- get() to place the next block of n data points in the array, the new buffer 74 that was filled by the input device 72 is swapped for the buffer 76 associated with that array; col. 9, line 63 – col. 10, line 16].

11. Although Frankel teaches the invention substantially as claimed, Frankel does not specifically teach designating a buffer in the second software system for a data frame.

However, Kramer teaches designating a buffer in the second software system for a data frame [If the sequence number is equal to the next frame value, the processor gets the next frame from the jitter buffer and sends the frame to the vocoder, and increments the next frame variable 555; col. 9, lines 1 – 23].

12. It would have been obvious to a person of ordinarily skilled in the art at the time of the invention to apply the teaching of designating a buffer in the second software system for a data frame as taught by Kramer to the invention of Frankel because this reserves a buffer for the next data frame and ensures that there will be sufficient memory to store the next data frame.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent NO. 6,295,645 to Brewer teaches a method and apparatus for providing downloadable functionality to an embedded coprocessor.

U.S. Patent NO. 6,701,383 to Wason teaches a cross-platform framework-independent synchronization abstraction layer.

U.S. Patent NO. 5,933,641 to Ma teaches a numeric intensive real-time software development system.

"An Introduction to the Java Media Framework Application Programming Interface" teaches the media processing model underlying the Java Media Framework API.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li B. Zhen whose telephone number is (703) 305-3406. The examiner can normally be reached on Mon - Fri, 8:30am - 5pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Li B. Zhen
Examiner
Art Unit 2126

lbz
May 10, 2004


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